WOMEN'S UNIVERSITY IN AFRICA

Addressing gender disparity and fostering equity in University Education

FACULTY OF MANAGEMENT AND ENTREPRENEURIAL SCIENCES

BSc HONOURS DEGREE IN INFORMATION SYSTEMS

BSc HONOURS DEGREE IN COMPUTER SCIENCE

MAIN PAPER

IS121: **INTRODUCTION TO DATABASE MANAGEMENT SYSTEMS**

HCS123: **DATABASE DESIGN AND IMPLEMENTATION**

INTAKE 26: **FIRST YEAR SECOND SEMESTER**

INTAKE 2: **FIRST YEAR SECOND SEMESTER**

TIME: 2 HOURS AFTERNOON

INSTRUCTIONS TO CANDIDATES

Answer any **four** questions.

QUESTION 1

Write short notes on the following

a) KBDSS; [3]

b) NoSQL; [3]

c) SQL; [3]

d) Business intelligent systems; [3]

e) Hadoop; and [4]

f) Types of system failures. [9]

QUESTION 2

a) There are three types of Structured Query Languages (SQL) used in databases. For each of the following groups of SQL below give a brief description and an example as you understand them.

i. Data Manipulation Languages (DML);

ii. Data Definition Languages (DDL); and

iii. iii) Data Control Languages (DCL) [15]

b) Describe concurrency problems associated with databases and the appropriate measures that are put in place so as to solve a respective concurrency problem. [10]

QUESTION 3

The three-level schema architecture has been proposed to achieve the important characteristics of the database approach. With the aid of a diagram explain the following terms:

a) Internal schema;

b) Conceptual schema; and

c) External schema [25]

QUESTION 4

a) Explain integrity constraints and their enforcement mechanisms. [15]

b) Discuss the following in view of database recovery:

i) Backup; and

ii) Logging and checking point [10]

QUESTION 5

Discuss the emerging trends in databases [25]

QUESTION 6

a) Describe the key characteristics of a data warehouse and how it differs in content, structure and function from an online transaction processing (OLTP) database. You should support your discussion with suitable diagrams and examples. [10]

b) For each of the following items, explain the underlying concepts, typical applications and any additional technical or implementation points if appropriate. Support your discussion with suitable diagrams and/or examples.

i. OLAP For example, discuss different implementations of OLAP, SQL and OLAP, aggregation [5]

ii. Multi-Dimensional Data For example, discuss roll-up, pivoting and what each dimension could represent [5]

iii. Data Mining For example, discuss patterns in data, techniques to identify these, data preparation, tools and predictions [5]

END